

ANNUAL REPORT OF THE OHIO ACADEMY OF SCIENCE

1964

Organized 1891 Incorporated 1892
Affiliated with the American Association for the Advancement of Science

OFFICERS FOR 1964-65

President

RICHARD J. ANDERSON

President-Elect

RICHARD A. POPHAM

Treasurer

RICHARD S. DAVIDSON

Director, Junior Academy

G. GERALD ACKER

Editor, The Ohio Journal of Science

DAVID H. STANSBERRY

Director, Visiting Scientists Program

WILLIAM A. MANUEL

Secretary

WILLIAM G. GAMBILL, JR.

HISTORIAN

RALPH W. DEXTER

Assistant Director, Junior Academy

ROBERT E. MCKAY

Business Manager,

The Ohio Journal of Science

GARETH E. GILBERT

Executive Secretary

JOHN H. MELVIN

Vice-Presidents

A. *Zoology:* A. S. BRADSHAW

B. *Plant Sciences:* CLARA WEISHAUP

C. *Geology:* C. B. MOKE

D. *Medical Sciences:*

BERTHA A. BOURONCLE

E. *Physics and Astronomy:* A. L. LUTZ

F. *Geography:* H. K. HUTTER

G. *Chemistry:* W. H. HALL

H. *Science Education:* F. R. MORRAL

I. *Anthropology and Sociology:*

W. H. HARLAN

J. *Conservation:* R. W. ALRUTZ

K. *Genetics:* N. S. COHN

Membership Chairmen

A. *Zoology:* J. R. HARRISON

B. *Plant Sciences:* T. R. FISHER

C. *Geology:* C. E. GRAHAM

D. *Medical Sciences:* A. J. EARNEY

E. *Physics and Astronomy:* F. MILLER, JR.

F. *Geography:* J. A. RINIER

G. *Chemistry:* J. D. REINHEIMER

H. *Science Education:* R. A. ROOD

I. *Anthropology and Sociology:*

MARTHA POTTER

J. *Conservation:* H. G. SMITH

K. *Genetics:* N. S. FECHHEIMER

COMMITTEES

Executive

R. J. ANDERSON, *Chm.*, G. G. ACKER, A. S. BRADSHAW, R. S. DAVIDSON, W. G. GAMBILL,
G. E. GILBERT, W. A. MANUEL, R. A. POPHAM, C. A. RANDALL

Nominating

MEMBERS OF THE EXECUTIVE
COMMITTEE

Library

Academy Librarian, MARY D. WALTERS, *Chm.*

J. D. CRUM.....Term expires 1965

JANE FORSYTH.....Term expires 1967

Ohio Flora

T. R. FISHER, *Chairman*

E. L. BRAUN

J. A. HERRICK

G. W. BLAYDES

E. S. THOMAS

CLARA WEISHAUP

Publications

W. G. GAMBILL, *Chairman*

J. D. CRUM.....Term expires 1965

JANE FORSYTH.....Term expires 1967

Resolutions

C. W. HEIMSCH, *Chairman*

W. H. CARMEAN.....Term expires 1966

R. H. REINHART.....Term expires 1967

Necrology

R. M. GIESY, *Chairman*...Term expires 1965

R. M. GEIST.....Term expires 1966

G.-H. SMITH.....Term expires 1967

75th Anniversary

R. C. STEPHENSON, *Chairman*

Committee being appointed.

Government Advisory

R. P. GOLDTHWAIT, *Chairman*

PAST PRESIDENTS

Education

W. H. SHAFFER, *Chairman*

Committee being appointed.

Program

VICE-PRESIDENTS AND

SECRETARY, *Chairman*

Research Grants

H. C. EYSTER, *Chairman*...April-Oct., 1964

R. H. DURRELL, *Chairman*...Oct.-April, 1965

J. G. OGDEN, III.....Term expires 1966

J. K. BALOGH.....Term expires 1967

Ohio University Local Arrangements

T. S. SMITH, *Chairman*

Committee being appointed.

THE OHIO JOURNAL OF SCIENCE 64(4): 285, July, 1964.

Academy Representatives

1. On the Joint Administrative Board of *The Ohio Journal of Science*:
J. D. CRUM.....Term expires 1965 JANE FORSYTH.....Term expires 1967
2. On the Executive Committee of the *Ohio Biological Survey*: D. M. DeLONG
3. On the Advisory Board of the Edwin H. and Nellie M. Rausenberger Conservation Foundation: R. J. ANDERSON
4. On the Council of the American Association for the Advancement of Science: J. H. MELVIN, G. G. ACKER (alternate) (Terms expire 1966)
5. Representatives to The Academy Conference: G. G. ACKER, J. H. MELVIN (Terms expire 1966)

The Council for 1964-65

ACKER, G. G.
ALRUTZ, R. W.
ANDERSON, R. J.
BOURONCLE, BERTHA A.
BRADSHAW, A. S.
COHN, N. S.
CRUM, J. D.
DAVIDSON, R. S.
DeLONG, D. M.
DEXTER, R. W.
DURRELL, R. H.
EARNEY, A. J.
FECHHEIMER, N. S.
FISHER, T. R.
FORSYTH, JANE L.

GAMBILL, W. G.
GIESY, R. M.
GILBERT, G. E.
GOLDTHWAIT, R. P.
GRAHAM, C. E.
HALL, W. H.
HARLAN, W. H.
HARRISON, J. R.
HEIMSCH, C. W.
HUTTER, H. K.
LUTZ, A. L.
MANUEL, W. A.
McKAY, R. E.
MELVIN, J. H.
MILLER, F., Jr.

MOKE, C. B.
MORRAL, F. R.
POPHAM, R. A.
POTTER, MARTHA
RANDALL, C. A.
REINHEIMER, J. D.
RINIER, J. A.
ROOD, R. A.
SHAFFER, W. H.
SMITH, H. G.
SMITH, T. S.
STANSBERRY, D. H.
STEPHENSON, R. C.
WALTERS, MARY D.
WEISHAUP, CLARA

REPORT OF THE SEVENTY-THIRD ANNUAL MEETING OF THE OHIO ACADEMY OF SCIENCE

The 73rd Annual Meeting was held at Western Reserve University, Cleveland, April 23, 24, and 25, 1964. A total of 489 persons registered in the various sections of the senior division of the Academy. Heading the Local Committee on Arrangements was Professor James D. Crum, who was most ably assisted by Mrs. Elizabeth G. Cramer. Other members of the committee were Franklin Westfall, John D. Cremer, Paul C. Moews, Jr., and Charles M. Davis. To all members of this committee and to the section hosts, the Academy extends its sincere thanks for the time and effort they gave in planning and executing arrangements for this meeting.

For the first time in the history of the Academy, the Annual State Science Day was held separately from the Annual Meeting. The 16th Annual State Science Day of the Junior Academy was held on April 17 and 18, 1964, at the Youth Center, Ohio State Fairgrounds, Columbus. Scheduling a separate time for the State Science Day (details are to be found in the Junior Academy report in another section of this Annual Report) alleviated the serious congestion which has characterized recent Annual Meetings. Members of the Academy were able to give their undivided attention to the sectional meetings and other affairs of the Academy, in the absence of demands on their time for assisting in judging student exhibits.

The Executive Committee, the Council, and the Committee on Election of Fellows met on April 23 in the Wade Park Manor, Cleveland. Accounts of their meetings and business which was transacted may be found elsewhere in this Annual Report. Eleven sections of the senior division held their annual sessions on Friday, April 24, in buildings on the campus of Western Reserve University. A total of 157 papers, one panel discussion, and 3 symposia were scheduled for the sectional meetings. A Junior Academy session for presentation of 20 papers by members was also held on April 24, at Western Reserve University. Two field trips were scheduled for Saturday, April 25: a full-day Geology trip to northern Geauga and southern Lake Counties, Ohio, and a Conservation trip to Stebbins Gulch at Holden Arboretum.

On Friday evening, April 24, the annual banquet and business meeting were held in the Wade Park Manor, Cleveland. Serving as toastmaster was Dr. James D. Crum of the Dept. of Chemistry, Western Reserve University. President John S. Millis extended greetings on behalf of Western Reserve University. Dr. Eugene Van Cleef of The Ohio State University responded for the Academy. Dr. Charles A. Randall of the Dept. of Physics, Ohio University, presented the presidential address entitled "Strange Particles."

In the absence of Professor G. G. Acker, Director of the Junior Academy, President Randall announced awards for outstanding high school teachers of science, one having been selected from each district in which the Junior Academy sponsors a Science Day annually. Announced at the same time were the names of schools which received the Kreckler Award for outstanding

science programs for the 1962-63 school year, and the school receiving the State Science Day Award. Those receiving the awards mentioned above are listed in the report of the Junior Academy elsewhere in this Annual Report.

At the annual business meeting immediately following the banquet, officers of the Academy for the coming year were elected; their names will be found at the beginning of this Annual Report. President Randall announced that Dr. Paul Sears, Dr. J. Ernest Carman, and Mrs. Clara Kenney had been elected by the Council to Honorary Life Membership. Names of the newly-elected Membership Chairmen for the various sections of the Academy in the coming year were read. These names will be found at the beginning of this Annual Report.

Names of the newly-elected Fellows of the Ohio Academy were read by the secretary. Those elected and their sectional affiliations are as follows:

<i>Zoology (A)</i>	JASON R. SWALLEN	<i>Chemistry (G)</i>
ANNA RUTH BRUMMETT	E. JEANNE WILLIS	E. RUDOLPH GERLACH
JOHN N. CHASE	THOMAS K. WILSON	JAY E. TAYLOR
A. J. EARNEY		E. OSCAR WOOLFOLK
GEORGE R. EASTERLING	<i>Geology (C)</i>	
ROBERT R. HAUBRICH	ROBERT P. HARTLEY	<i>Science Education (H)</i>
ROBERT P. HOLDSWORTH, JR.	CHARLES H. INNIS	VICTORIA GUENTHER
ROGER F. KELLER		RALPH A. ROOD
GAIL R. NORRIS	<i>Medical Sciences (D)</i>	PHILIP K. WELTY
DAVID H. STANSBERRY	WILLIAM T. COLLINS	
J. ROSS STEVENSON	JAMES R. FREY	<i>Anthropology and Sociology (I)</i>
HENRY H. VALLOWE	JAMES D. GRAHAM	H. THEODORE GROAT
PHILIP H. VOGEL	EUGENE E. MIHALYKA	MARTHA A. POTTER
DONALD L. WISE	FRANK E. NULSEN	
<i>Plant Sciences (B)</i>	<i>Physics and Astronomy (E)</i>	<i>Conservation (J)</i>
SISTER M. ANGELITA	DONALD W. BOWMAN	PAUL KASER
NATHAN W. EASTERLY	JOHN F. EICHELBERGER	
GARETH E. GILBERT	EDWARD S. FOSTER, JR.	<i>Genetics (K)</i>
BLAIR F. JANSON	M. PAUL HAGELBERG	THOMAS G. GREGG
CURT LEBEN	DAVID G. PROCTOR	VERL L. HOUSE
CAROL B. STEIN		JOHN T. MCQUATE

WILLIAM G. GAMBILL, JR., *Secretary*

ANNUAL REPORT OF THE EXECUTIVE COMMITTEE AND THE COUNCIL

The Executive Committee met June 22, September 21, October 26, and December 6, 1963, January 18, March 7, and April 23, 1964. The Council met December 7, 1963, and April 23, 1964.

1. *Meetings of the Executive Committee.*—The functions of the Executive Committee, according to the Constitution, are to receive and act on any new business, to prepare recommendations for the Council, to act as the legislative body of the Academy between meetings of the Council, to fill any vacancies except those of Vice-Presidents, and to prepare a list of nominees for offices of the Academy. In addition to handling matters of business which fell within the categories just listed, the Executive Committee, during the past year (May 1, 1963 to April 23, 1964), took the following actions: approved the name *Oasis* for the "News Notes" from an extensive list of suggestions; received a grant of \$5,000 from the Department of Health, Education, and Welfare for a Science Youth Congress to be held in the Youth Center at the Ohio State Fairgrounds in Columbus during the second week of June, 1964; received and approved an offer from the U. S. Army, through its Science and Humanities Symposium Program, to help pay the cost of the Science Youth Congress Program in its second and third years of operation; sitting as a nominating committee, prepared a slate of officers to be presented at the Annual Meeting for voting; drew up a list of nominees for one opening each on the Research Grants Committee, the Necrology Committee, and the Resolutions Committee to be submitted to the Council; accepted a proposed budget of \$67,590 for 1964; instructed the President of the Academy to appoint a special committee to prepare the design for a "follow-up" study of winning participants in State Science Day competition in Ohio and to suggest appropriate individuals to carry it out for the year 1964; instructed the Central Office to send all communications of the Ohio Academy *except the Journal* to those individuals who have retired professionally, who have been members of the Academy for a minimum of fifteen years, and who have requested resignation from the Academy; approved submission of the names of Dr. Paul Sears, Dr. J. Ernest Carman, and Mrs. Clara Kenney to the Council for Honorary Life Memberships; appointed Professor G. G. Acker to serve as Ohio Academy Representative to the Academy Conference in Cleveland, and Dr. Guy-Harold Smith as Academy Representative to the AAAS meetings in Cleveland in December, 1963; received grants from the National Science Foundation for \$22,000 for the Visiting Scientists Program, \$3,085 for Junior

Academy Activities, and \$3,210 for an Undergraduate Development Program, all for the 1964-65 school year; reappointed Dr. W. A. Manuel as Director of the Visiting Scientists Program for 1964-65; reappointed Professor G. G. Acker as Director of the Junior Academy Program for 1964-65; designated Mr. John H. Melvin as Director of the Undergraduate Development Program for 1964-65; received the resignation of Mrs. Clara Kenney, for six years Editor of the *Ohio Academy of Science News*, and adopted a resolution commending her for her outstanding work in that capacity; employed Mr. Hobart H. Bell as Educational Consultant; approved the employment of a full-time clerk-typist for the Central Office; approved the Annual Report on the financial operation of the Academy for the year ended December 31, 1963, submitted by Robert F. Harbrecht, CPA; approved a revised budget for 1964 of \$81,665; announced that the Academy may receive up to \$3,000 from the Ohio Research and Development Foundation toward the expenses of the Youth Science Congress; appointed Dr. George W. Burns as liaison person between the Academy and the Center of Science and Industry, Columbus; appointed Dr. Robert C. Stephenson of The Ohio State University as Chairman of the 75th Anniversary Celebration Committee for the year 1966; received the resignation of Dr. Jacob Verduin from the Joint Administrative Board of *The Ohio Journal of Science* and from the Executive Committee, necessitated by his taking a position outside of Ohio; set dates for the 1965 Annual Meeting at Ohio University for April 23-24, 1965; discussed at length the feasibility of setting up a new Section of Behavioral Sciences, which would incorporate the present Section of Anthropology and Sociology and would add Psychology; discussed the possibility of setting up a new Section in Science Management for persons who have been or are professional scientists, but who have later become involved in executive or administrative positions in science; announced that the Academy had a membership of 2,203 individuals as of April 23, an all-time record, and 61 corporation and institution memberships.

2. *Meetings of the Council.*—At both meetings, reports were made by officers and committee chairmen. Annual reports from these persons will be found on the following pages. Other actions of the Council included: approval of the proposed budget of \$67,590 for the year 1964; elected Dr. Paul Sears, Dr. J. Ernest Carman, and Mrs. Clara Kenney to Honorary Life Membership; indicated receptiveness to invitations from colleges or universities in Ohio for the Annual Meeting of 1967; accepted the tentative offer of Ohio Wesleyan University to hold the Annual Meeting on its campus in 1968; acknowledged the appointment of Dr. Gareth E. Gilbert to succeed Dr. Richard A. Popham as Business Manager of *The Ohio Journal of Science*; expressed its deep appreciation of the fine service rendered by Dr. Popham during his fourteen years of service to the *Journal*; approved the revised budget for 1964 of \$81,665; elected 46 nominees to the rank of Fellow of The Ohio Academy of Science. (Names of the newly elected Fellows may be found in a preceding section of this annual report.)

WILLIAM G. GAMBILL, JR., *Secretary*

REPORT OF THE TREASURER

THE OHIO ACADEMY OF SCIENCE COMPARATIVE STATEMENT OF FINANCIAL CONDITION As of December 31, 1963 and 1962 ASSETS

	1963	1962
Cash Checking Account.....	\$ 201.08	\$ 4,539.68
Insured Savings Accounts		
National City Bank, Cleveland, Ohio.....	5,000.00	10,113.75
Union Commerce Bank, Cleveland, Ohio.....	5,100.00	10,175.00
Citizens Savings & Loan, Painesville, Ohio.....	10,000.00	10,225.00
Hunter Savings & Loan, Loveland, Ohio.....	5,000.00	10,000.00
Cleveland Trust Co., Cleveland, Ohio.....		7,061.25
Total Cash.....	\$25,301.08	\$52,114.68
Investment Certificate, Modern Finance Co.....		\$ 3,000.00
Receivables:		
Costs to be reimbursed by Dept. of H.E.W.....	\$ 964.49	
Interest, Dividends, Misc.....	805.31	370.45
Investments in Common Stocks*		
American Telephone and Telegraph Co.....	300.00	300.00
BancOhio Corporation.....	658.54	721.99
City National Bank.....	5,250.00	16,824.00
Huntington National Bank.....	4,825.00	4,825.00
Metro-Goldwyn-Mayer.....	6,995.95	6,995.95
TOTAL ASSETS.....	<u>\$56,737.82</u>	<u>\$73,514.62</u>
*Approximate market value at end of year.....	<u>\$39,140.00</u>	<u>\$18,220.00</u>

LIABILITIES AND NET WORTH

LIABILITIES		
Accounts Payable.....	\$ 8,693.08	
Accrued Payroll Taxes.....	451.65	\$ 412.56
Advance Payments Not Spent at End of Year (Schedule A-3):		
National Science Fdn. Grants.....	5,489.39	35,057.17
Southwestern Ohio Ind. Fdn.....	7,833.00	10,633.00
Armco Scholarship Fund.....	2,625.00	
Interest Payable to N.S.F.....	331.61	325.00
Total Liabilities.....	\$25,423.73	\$46,427.73
DEFERRED INCOME		
Dues Received in Advance.....	\$ 7,535.00	\$ 2,698.00
Administration Fee Rec. in Advance.....	136.65	204.97
Revenues Received, Not Yet Earned.....	\$ 7,671.65	\$2,902.97
NET WORTH		
Research Fund.....	\$ 2,315.80	\$ 2,315.80
Endowment Fund.....	1,259.06	481.54
Unencumbered Surplus.....	20,067.58	21,386.58
Total Net Worth.....	\$23,642.44	\$24,183.92
TOTAL LIABILITIES AND NET WORTH	\$56,737.82	\$73,514.62

COMPARATIVE STATEMENT OF REVENUE AND EXPENDITURES

For the years ended December 31, 1963 and 1962

	1963	1962
REVENUE		
Membership dues:		
Individuals.....	\$ 9,429.40	\$ 9,477.00
Corporations and Institutions.....	5,300.00	3,000.00
Total Fees.....	\$14,729.40	\$12,477.00
Gifts:		
Kettering Foundation.....	\$ 5,000.00	
Ohio Research and Development Foundation.....	500.00	
Columbus Technical Council.....	150.00	\$ 150.00
C. M. Goethe.....	50.00	50.00
Columbus Foundation.....		500.00
The Sheffield Corporation.....	25.00	
Total Gifts.....	\$ 5,725.00	\$ 700.00
Junior Academy revenue.....	\$ 4,848.84	\$ 3,336.54
Interest earned (Schedule B-1).....	1,118.10	1,872.92
Dividend income (Schedule B-2).....	590.80	415.80
Adm. fees (N.S.F. and S.O.I.F.).....	4,185.86	4,702.86
Other income.....	14.25	95.75
TOTAL REVENUE.....	\$31,212.25	\$23,600.87
EXPENDITURES		
Salaries, executive secretary and clerical.....	\$14,319.96	\$13,899.96
Part-time help and services.....	3,181.98	1,425.86
Brochures and programs.....	709.24	696.95
Printing and engraving.....	930.00	353.70
Office supplies and expense.....	1,108.88	649.53
Postage.....	1,229.69	871.33
Telephone.....	309.08	308.51
Travel.....	348.12	287.45
Payroll Taxes.....	457.45	338.97
Outstanding teachers award.....	106.00	129.00
Other awards.....	49.30	59.45
Other costs.....	869.34	506.93
Newsletter.....	3,809.44	1,482.78
<i>The Ohio Journal of Science</i>	4,758.14	3,454.33

Junior Academy Expense.....	2,784.53	811.79
Reimbursement by organizations for shares of mailing and advertising (posted to expense accounts in 1962).....	(2,439.90)	
TOTAL EXPENDITURES.....	\$32,531.25	\$25,276.54
EXCESS OF EXPENDITURES OVER REVENUE.....	(\$ 1,319.00)	(\$ 1,675.67)

RICHARD S. DAVIDSON, *Treasurer*

REPORT OF THE ACADEMY LIBRARIAN

	1962-63	1963-64
Foreign Exchanges.....	417	423
Domestic Exchanges.....	138	134
Totals.....	555	557
NEW EXCHANGES		
Foreign.....	12	12
Domestic.....	2	1
EXCHANGES DROPPED		
Foreign.....	9	6
Domestic.....	1	5
SPECIAL PAPERS SOLD		
Number of papers.....	5	5
*Revenue.....	\$3.75	\$4.25

*Monies from the sale of Special Papers turned over to Treasurer.

MARY D. WALTERS, *Librarian*

REPORT OF THE JOINT ADMINISTRATIVE BOARD OF THE OHIO JOURNAL OF SCIENCE

The Joint Administrative Board met in Columbus on November 16, 1963, all members being present and including Drs. Verduin, Stansbery, Davidson, Forsyth, Weiss, and Gilbert. Major items of business included (1) the appointment of board member Forsyth to the additional task of Assistant Editor of the *Journal*, (2) the appointment of Dr. Gilbert as Business Manager of the *Journal* replacing Dr. Popham who, after 14 years of dedicated service, had asked to be relieved, (3) accepted—with thanks—the audit made by Drs. House and J. N. Miller, which reported the books in proper order as of September 25, 1963, (4) approved the annual publishing in the *Journal* of the names of reviewers under the condition they first be contacted and allowed to request deletion of their names if they so desire, (5) discussed—and agreed to continue—the current practice of financially subsidizing authors as to charge for reprints, and (6) requested the Business Manager prepare a summary concerning foreign mail of the *Journal*.

Additional items concerning the *Journal* which are deemed worthy of report are as follows:

1. All numbers of Vol. 63 were published on schedule.
2. The number of copies printed of Vol. 63 was 2950.
3. There has recently been a significant increase in circulation, the total numbers for April of 1963 and 1964 being 2583 and 2896 respectively.
4. Annual payments by the Academy to the *Journal* have increased approximately one thousand dollars since 1960.

GARETH E. GILBERT, *Secretary of the Board*

THE OHIO JOURNAL OF SCIENCE

BALANCE SHEET

	Vol. 61	Vol. 62	Vol. 63
	Fiscal Year	Fiscal Year	Fiscal Year
	2/12/61	2/19/62	1/1/63
	2/19/62	12/31/62	12/31/63
RECEIPTS			
Bank balance at beginning of period.....	\$ 3,226.40	\$ 4,432.42	\$ 4,458.78
O.S.U.—paid for subscriptions.....	3,000.00	3,000.00	3,000.00
O.A.S.—paid for subscriptions.....	2,961.00	2,963.00	2,980.00
Non-members—paid for subscriptions.....	970.50	593.50	892.90
Separate numbers, volumes, and index sold.....	901.15	553.55	783.68
Reprints.....	303.45	842.25	1,880.01
O.A.S.—paid ½ cost of plates.....	453.30	221.54	313.64

O.A.S.—paid for annual report.....	234.60	269.79	535.02
Miscellaneous.....	2,480.00	3,000.00	6.00
Advertisements.....	279.60	205.02	265.24
	<u>\$14,810.00</u>	<u>\$16,081.07</u>	<u>\$15,115.77</u>
EXPENDITURES			
Spahr and Glenn—printing O.J.S.....	\$ 6,411.81	\$ 5,835.05	\$ 4,583.73
Engraving—plates.....	442.48	627.29	1,306.25
Postage and express.....	349.58	374.68	340.87
Labor.....	0.00	7.50	20.00
Editor's office.....	403.50	396.50	444.66
Office expenses and bank charges.....	94.80	158.58	13.57
Advertising of the O.J.S.....	15.00	15.00	15.00
Reprints.....	163.53	779.83	1,132.99
Mailing envelopes and forms.....	0.00	335.11	0.00
Refunds.....	0.00	92.75	0.00
Miscellaneous.....	2,496.88	3,000.00	86.23
Bank balance at end of period.....	4,432.42	4,458.78	1,191.97
Deposit with O.A.S.....			5,980.50
	<u>\$14,810.00</u>	<u>\$16,081.07</u>	<u>\$15,115.77</u>

THE OHIO JOURNAL OF SCIENCE

REPORT OF THE EDITOR OF VOLUME 63, 1963

to the Joint Administrative Board

April 18, 1964

Volume 63 of *The Ohio Journal of Science* contained six numbers having a total of 332 pages, of which 268.8 pages were devoted to 42 scientific papers or notes in eight of the ten areas designated as sections of The Ohio Academy of Science. Eighteen pages were used as *Journal* format, 17 pages were devoted to the Annual Report of the Academy, and nine pages were used to print the Constitution of the Academy. Approximately six pages were utilized for advertising, while book notices and reviews accounted for five. The remaining eight pages constituted the volume index, table of contents, masthead, and announcements.

Fourteen (33%) of the published papers were from The Ohio State University; 18 (42%) were from other sources within the state; 11 (25%) came from authors outside Ohio, and one of these came from outside the country.

I wish to thank all of those who gave of their time and talents to serve as reviewers of manuscripts during the past year. The quality of the *Journal* is due primarily to their efforts.

DAVID H. STANSBERRY, *Editor-in-Chief*

DISTRIBUTION BY FIELD OF ARTICLES PUBLISHED IN VOLUME 63

Field	Articles		Pages	
	No.	Per cent	No.	Per cent
Anthropology and Sociology	1	2.4	8.3	3.1
Chemistry	2	4.8	8.9	3.3
Conservation	3	7.1	20.1	7.5
Genetics	0	0.0	0.0	0.0
Geography	0	0.0	0.0	0.0
Geology	6	14.3	47.4	17.6
Medical Sciences	1	2.4	6.0	2.2
Physics and Astronomy	1	2.4	8.5	3.2
Plant Sciences	11	26.2	76.0	28.3
Science Education	0	0.0	0.0	0.0
Zoology	17	40.5	93.6	34.8
	<u>42</u>	<u>100.1%</u>	<u>268.8</u>	<u>100.0%</u>

ALLOCATION OF SPACE IN VOLUME 63

	Pages	Per cent
Scientific Papers and Notes	268.8	81.2
Journal Format	18.0	5.4
Annual Report of the Academy (July)	17.0	5.1
Constitution of the Academy (July)	9.0	2.7
Advertising	6.4	1.9
Book Notices and Reviews	4.7	1.4
Volume Index (November)	3.0	0.6
Volume Table of Contents (November)	2.0	0.6
Volume Masthead and Staff Sheets (November)	2.0	0.6
Academy and Journal Announcements	1.1	0.3
Total Pages Printed	332.0	99.8%

REPORT OF THE JUNIOR ACADEMY,
THE OHIO ACADEMY OF SCIENCE

The SIXTEENTH year of operations of the Junior Academy was characterized by the introduction of new events and the revision of existing programs. Activities sponsored by the Junior Academy for the first time are The Science Youth Congress and the Student Research Projects at the Center of Science and Industry.

State Science Day was separated from the Annual Meeting of the Academy and moved to a Saturday date at a central location.

Financial support for the year's operation was received from several sources including: United States Department of Health, Education, and Welfare; Ohio Research and Development Foundation; Columbus Technical Council; Armco Steel Corporation; and Battelle Memorial Institute.

SECTION I ORGANIZATION

New Committees:

A. Continuing Committees

1. *State Science Day*—Robert McBurney, Worthington High School, Chairman.
2. *Science Youth Congress General Committee*—Gerald Ackler, Director, Junior Academy, Chairman; John H. Melvin, Executive Secretary, Ohio Academy of Science, Coordinator of Sub Committees.

B. Temporary Committees

1. *The Space Allocation Committee*—Henry Vallowe, Chairman, recommended a formula for District quotas based upon the number of Superior and Excellent ratings at District Science Day.
2. *Committee for Revision of Constitution*—Howard Hintz, Chairman; committee submitted a revised version to be acted upon at October, 1964, Council Meeting.
3. *Committee on Selection of Outstanding Teacher*—Henry Vallowe, Chairman; report was submitted and will be acted upon at the October Council Meeting.

SECTION II AFFILIATED LOCAL SCIENCE DAYS

The number of Local Science Days affiliated with the Junior Academy on April 1, 1964, was 224. This represents an increase of 44 during the year. One hundred fourteen of these science days report that 19,167 projects from 324 schools were evaluated by 2,664 judges and viewed by approximately 100,000 persons. Eight hundred eighty-three teachers sponsored projects and 1,100 additional persons were used in an administrative capacity.

SECTION III DISTRICT SCIENCE DAYS

	No. Schools	No. Projects	No. Judges
SE	49	428	105
E	47	229	80
NE	93	819	210
NC	97	996	300
C	102	910	275
SW	69	431	192
W	50	443	70
NW	76	784	163
N	30	370	86
Moh.	45	437	126
Total	658	5,847	1,607

SECTION IV STATE SCIENCE DAY

Five hundred ninety-two students from 270 schools presented projects for judging at the 1964 State Science Day held at the Ohio Expositions Center, Youth Center Building and Arts and Crafts Building, Friday and Saturday, April 17 and 18. The projects were distributed as follows: Botany 62; Zoology 197; Chemistry 112; Physics 132; Earth Science 41; Mathematics 42; and Conservation 6. Two hundred twenty-nine students were awarded Superior certificates; 313 were rated Excellent and the remainder (50) received Good ratings. Eleven of the 603 registrants failed to show. Two students, one from Cleveland and the other from Youngstown, presented projects but were refused entry because of irregularities.

This year, for the first time, State Science Day was held separately from the Annual Meeting of the Academy. The Youth Center and The Arts and Crafts Building at the Ohio Expositions Center in Columbus provided a central location with ample facilities to accommodate our event. Two hundred sixty-three students and teachers stayed overnight in the Youth Center Dormitories and ate breakfast in the cafeteria. More than 2,000 persons attended the Awards Meeting in the Youth Center Auditorium. In addition to the Chairman, Robert McBurney, the following persons served on the State Science Day Committee: H. Ray Wagner, Mt. Gilead, Registration; John Shrum, The Ohio State University, Housing; Jerrold Karshner, Columbus, Hospitality; Mrs. Vicki Guenther, Mantua, Evaluation; Philip Welty, Defiance, Statistics; Mrs. Margaret Acker, Bowling Green, Administration; Dan Sedam, Columbus, and Mrs. Mildred Bowman, McConnelsville.

SECTION V OHIO ACADEMY OF SCIENCE NEWS

Volume XVI of the News consisted of three regular issues and a special issue commemorating the Cleveland Meeting of the American Association for the Advancement of Science.

Mrs. Clara Kenney resigned as Editor on January 1, 1964. A successor has not been named.

SECTION VI SCHOLARSHIP TESTS

Seventy-nine students entered the scholarship program and were administered tests. Students scoring above the 90 percentile on all three tests were recommended to Ohio colleges for scholarship consideration.

Miss Meredith Eiker, Shaker Heights High School, was named recipient of the Armco Steel Corporation Scholarship for 1964.

Chairman: William Zeitler, Columbus.

SECTION VII OUTSTANDING TEACHER AWARDS

The following teachers received the Outstanding Teacher Awards for 1963-64:

Southeast: Mrs. June Hendershot, Newport High School

East: Sister Ignatia Marie, Catholic Central High School, Steubenville

Northeast: William I. Mutchmore, Lehman High School, Canton

North Central: Thomas Bain, Harding High School, Marion

Central: Jerrold Karshner, Whetstone High School, Columbus

Southwest: Gordon Woodward, Walnut Hills High School, Cincinnati

West: Donald Tarter, Tippecanoe High School, Tipp City

Northwest: Charles Zimmerman, Bowling Green Junior High School

North: None selected

Mohican: James McDowell, Ashland High School

SECTION VIII KRECKER AWARDS

Frederick H. Kreckler awards sponsored by Battelle Memorial Institute were awarded to schools in all ten districts.

Southeast: Marietta High School

East: Bishop Rosecrans High School, Zanesville

Northeast: Shaker Heights High School

North Central: St. Mary High School, Sandusky

Central: Bishop Watterson High School, Columbus

Southwest: West Alexandria High School

West: North High School, Springfield

Northwest: McAuley High School, Toledo

North: Liberty Center High School

Mohican: Lexington High School

Chairman: Floyd West, Bexley High School

SECTION IX STATE SCIENCE DAY

Ten schools were eligible to compete for the 1964 State Science Day Awards. Parma High School was the only successful competitor with five superior projects out of five entries. Mr. Harold Shaw, West Alexandria High School, was chairman of the committee.

SECTION X STATE FAIR EXHIBITS

The Junior Academy sponsored the Youth Science Exhibits at the Ohio State Fair during August 30 to September 2, 1963. Dr. Bertram Thomas, President of Battelle Memorial Institute, delivered the feature address and presented awards to the participants.

John Coontz, Marion-Franklin High School, served as chairman of the State Fair Committee.

SECTION XI JUNIOR ACADEMY SESSION

Two sessions for the presentation of research papers will be held in conjunction with the Annual Meeting of The Ohio Academy of Science at Western Reserve University on April 24, 1964.

Chairman: Karl Braun, Springfield North High School.

SECTION XI PERSONNEL

Changes in Junior Academy Personnel have been made as follows: Southeast—John W. Cole, Jackson High School, High School Councilman; East—Fred Bretschneider, Cambridge High School, High School Councilman; Northeast—Mrs. Vicki Guenther, Crestwood High School, Mantua, High School Councilman; North Central—Kenneth Bowersox, Port Clinton High School, High School Councilman; Central—Jerrold D. Karshner, Whetstone High School, High School Councilman; Southwest—Robert F. Burns, Princeton High School, Cincinnati, High School Councilman; West—John H. Snider, Urbana High School, High School Councilman; Northwest—Charles Zimmerman, Bowling Green Junior High School, High School Councilman; Mohican—John Stombaugh, Madison Junior High School, Mansfield, High School Councilman; Junior Academy Session—Karl Braun, North High School, Springfield; State Science Day—Robert McBurney, Worthington High School.

SECTION XII SCIENCE YOUTH CONGRESS

The first Annual Science Youth Congress will be held at the Youth Center on June 11-13, 1964. Sophomores and Juniors are eligible to attend as delegates. Selected seniors will participate in the program. Internationally known scientists have been invited to deliver major addresses and lead technical sessions.

Robert J. Antinone, Steubenville; Meredith Eiker, Shaker Heights; William G. Hutchison, Columbus; Mary Riley, Cincinnati; Sheryl Schmidt, Elyria; John Teter, Galion (all high school students); and Robert Madaffer, Whitehall (teacher), have been selected to accompany Gerald Acker, Director of the Ohio Junior Academy, to this event to be held at Fort Leslie McNair, Washington, D. C., on April 22-24. The Symposium is sponsored by the U. S. Army Research Office through a grant to Duke University.

Delegates to future symposia will be chosen from participants in the Science Youth Congress. Since the 1964 Congress will not be held until June, this year's delegates were selected on the basis of performance in the scholarship program.

The General Committee: Gerald Acker, Bowling Green, Director and Committee Chairman; John H. Melvin, Columbus, Coordinator; Thomas H. Dudgeon, Cleveland, Finance Chairman; S. N. Hallock, II, Columbus, Publicity Chairman; Captain James K. Wheatley, Columbus, Recognition Chairman; G. Kenneth Bradford, Columbus, Evaluation Chairman; Robert O. Stith, Columbus, Speaker Contacts Chairman; Robert Madaffer, Whitehall, Local Arrangements Chairman; Monsignor Edward F. Spiers, Columbus, Special Guests Chairman; George Leist, Toledo, Selection Chairman; R. Ernest Christin, Columbus, Tours Chairman; Major N. B. Eldred, Columbus, Military Liaison; Miss Louella McCann, Columbus, Social Affairs Chairman; Mrs. Hazel Wilfong, Columbus, Registration and Records Chairman.

SECTION XIII STUDENT RESEARCH PROJECTS

The new Center of Science and Industry, located in Old Memorial Hall in Columbus, has arranged to display a number of outstanding projects from State Science Day. Present plans call for nine students at a time to present their work to the public for approximately two weeks. Successive groups will be scheduled throughout the year.

REPORT OF THE COMMITTEE ON RESEARCH GRANTS

RESEARCH FUND Balance, January 1, 1963.....	\$2,315.80
Contributions from American Association for the Advancement of Science.....	700.00

Total funds available.....	\$3,015.80
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GRANTS

Michael P. Sipes, A Taxonomic Survey of the Salamanders of Northeastern Ohio.....	\$100.00
Edward O'Donnell, Crossbedding and Structures of the Brassfield Limestone.....	64.08
Susan Schilt, Extensive Record of Complete and Incomplete Life Cycle of Insects.....	28.00

John Tappe, The Geochemistry, Petrology and Structural Geology of the Big Timber Stock, Crazy Mountains, Montana.....	75.00
Carol A. Reichert, The Genus Agrimonia in Ohio.....	75.00
John D. Sims, A Petrographic Study of the Livingston Formation (Cretaceous-Paleocene), Crazy Mountain, Montana.....	75.00
Edward J. P. Hauser, Studies in Viburnum and Other Caprifoliaceae in Ohio.....	70.00
Richard O. Loudon, The Stratigraphic Relationship of the Olentangy Formation of Central Ohio to the Prout Limestone and Plum Brook Shale of North Central Ohio.....	75.00
James T. Teller, Mapping Glacial Deposits (Illinoian and Wisconsin) Clinton County, Ohio.....	75.00
William J. Brutvan, Jr., The Economic Aspects of Quarry Operations in Northwestern Ohio.....	62.92
Total Grants.....	700.00
RESEARCH FUND Balance, December 31, 1963.....	\$2,315.80
(Use restricted to excess of funds over permanent balance of \$2,000)	
H. C. EYSTER, <i>Chairman</i>	

REPORT OF THE OHIO FLORA COMMITTEE

Progress has been made in several areas of the flora project during the past year. "The Monocots of Ohio" edited by Dr. E. L. Braun, will be in manuscript by the fall of 1964. Dr. Clara Weishaupt is monographing the Gramineae for that volume.

The "Compositae of Ohio" project by Dr. T. R. Fisher is about 60 per cent finished. This project received the support of the Development Fund of The Ohio State University during the past academic year.

Other projects in progress or finished are as follows:

Rosales—Dr. William Gambill
 Cruciferae—Dr. William Easterly
 Campanulaceae—Mr. Robert Cruden
 Rubiales—Mr. Edward Hauser
 Ranales—Dr. Percy Lilly

T. RICHARD FISHER, *Chairman*

REPORT OF THE ACADEMY HISTORIAN

During the past year, the Academy Historian has made the following contributions to the history of science in Ohio in general and with reference to The Ohio Academy of Science in particular. At the annual meeting of The Ohio Academy of Science held at Central State College, 26 April 1963, I read a paper to the Section on Anthropology and Sociology entitled "Contributions of Frederic Ward Putnam to Ohio Archaeology." This paper is now in press for *The Ohio Journal of Science*.

On 20 April 1963, I read a paper on the "History of the Medical Sciences Section of the Ohio Academy of Science" at the annual meeting of The Ohio Academy of Medical History at Granville. At the last annual meeting of the group, held 18 April 1964, I gave a paper on "Dr. Victor Sterki: Physician and Naturalist of New Philadelphia." Dr. Sterki was a prominent member of The Ohio Academy of Science in its earlier years. In a journal named in his honor (*Sterkiana*, No. 12), I published a paper on "Some Interesting Molluscan Records of George J. Streator, 1881-1909."

I also read a paper on his science activities before the Portage County Historical Society 25 October 1963. Streator was an active member in the early days of our academy.

At the meetings of the American Nature Study Society held in connection with the American Association for the Advancement of Science held in Cleveland during December, 1963, I read a paper "Some Early Naturalists of the Cleveland Area." (including two charter members and several early members of The Ohio Academy of Science).

I published in the April 1964 issue of the *Ohio Academy of Science News* a feature article entitled "Values of Meetings of Academies of Science."

Below I have compiled a list of certain officers and committee chairmen to bring such records up to date. The last compilation was published in *The Ohio Journal of Science* 31: 196-198, 1931.

Executive Secretary: Kenneth B. Hobbs (1960-61) and John H. Melvin (1962-).

Director (or Executive Secretary) of Junior Academy: C. G. Shatzer (1932-33), C. W. Jarvis (1940-44), F. H. Kreckler (1947-53), R. E. McKay (1954-57), and G. G. Acker (1958-).

Assistant Director, Junior Academy: R. E. McKay (1958-).

Director, Visiting Scientists Program: William A. Manuel (1960-).

Director of Public Relations: W. H. Shaffer (1956), Lincoln C. Pettit (1957), John R. Coash (1958-61), William A. Manuel (1962-63).

Chairman, Government Advisory Committee: R. P. Goldthwait (1963-).

Academy Historian: William H. Alexander (1941-54), and Ralph W. Dexter (1958-).

Chairman, Board of Trustees (After 1939, known as Trustees of Research Fund; after 1963, known as Committee on Research Grants): Herbert Osborn (1932-34; 1936-49), George D. Hubbard (1935), E. N. Transeau (1950-51), G. B. Barbour (1952-53), K. G. A. Busch (1954), E. S. Thomas (1955), G. W. Blaydes (1956; 1959), R. P. Goldthwait (1957), H. V. Knorr (1958; 1961), W. C. Beaver (1960), E. H. Cherrington (1962), and H. C. Eyster (1963-64).

Chairman, Committee on State Parks and Conservation (After 1938, known as Committee on Conservation): Herbert Osborn (1932-34), Edward S. Thomas (1935-39), A. E. Waller (1940-42), T. H. Langlois (1943-47), Arthur Harper (1948-49), C. A. Dambach (1950), J. R. Beck (1951), and R. A. Hefner (1952).

(In later years, the Section of Conservation took the place of this Committee.)

Chairman, Ohio Flora Committee: E. L. Braun (1950-59), and T. R. Fisher (1960-).

Chairman, Library Committee: E. M. Miller (1932-48), Lillian Michaelis (1949-50), Margaret McCartney (1951-52), Morton Coburn (1953-57), Donald Pearce (1958-59), Mary Pinson (1960), Jean Brotsman (1961), and Mary D. McCoy (1962-).

Chairman, Publications Committee: F. O. Grover (1932-34), F. H. Kreckler (1935), E. L. Rice (1936-38), and W. G. Gambill (1963).

(In intervening years, the secretary served as chairman of the Publications Committee.)

Chairman, Membership Committee (After 1939, the Membership Vice Presidents of the various sections formed this committee. They are now called Membership Chairmen, and become Vice Presidents in charge of sectional meetings the following year.): G. D. Hubbard (1932), J. P. Visscher (1933), D. M. DeLong (1934), W. H. Camp (1935), K. G. A. Bush (1936-37), J. L. Rich (1938), and C. W. Jarvis (1939).

Chairman, Institution and Corporation Memberships: Paul Rothermund (1958-61), E. F. Paddock (1962), and S. M. Hallock (1963).

Chairman, Training and Certification of Science Teachers (Later changed to Committee on Education): H. A. Cunningham (1957-58), J. C. Gray (1959-60), H. J. Buckingham (1960-61), C. A. Randall (1961-62), E. H. Bush (1962-64), and W. R. Riley (1963-64).

Chairman, Committee on Necrology: W. H. Bucher (1932), R. C. Osburn (1933; 1937), F. C. Blake; J. E. Carman (1934-35), J. P. Porter (1936), Herbert Osborn (1938-39), A. E. Waller (1940), J. G. Albright (1941), G. D. Hubbard (1942-43), F. H. Kreckler (1944-46), R. V. Sinnett (1947-48), J. E. Carman (1949-50), H. H. M. Bowman (1951-56; 1959; 1962), J. T. Maddox (1957-58; 1961), A. G. McQuate (1960), W. C. Stehr (1963), and R. M. Giesy (1964).

Chairman, Committee on Resolutions: E. L. Braun (1932), H. C. Sampson (1933), G. W. Courcy (1934), A. W. Lindsey (1935; 1953), F. C. Waite (1936), H. H. M. Bowman (1937), E. Van Cleef (1938), A. T. Evans (1939), E. W. E. Schear (1941), J. P. Visscher (1942), Ira Wilson (1943), F. G. Detweiler (1944), E. M. Spieker (1946), N. Mogendorff (1947-48), W. C. Kraatz (1949; 1956-57), W. C. Beaver (1950-51), H. R. Eggleston (1952), G. B. Barbour (1954), W. A. Manuel (1955), R. V. Bangham (1958-59), F. O. Hazard (1960), K. L. Kelley (1961), J. H. Cooper (1962), A. G. Linscheid (1963), and W. E. Singer (1964).

RALPH W. DEXTER, *Academy Historian*

REPORT OF DIRECTOR OF VISITING SCIENTISTS PROGRAM

1. Reference is made to the April issue of the Ohio Academy of Science News, in which several summaries and tables are printed. It does not seem necessary to repeat all of them here.

2. The Program has continued to grow and prosper. The following data and statements refer to the situation as of April 20, 1964.

- a. We now offer visitors in 8 subject matter areas: biology, chemistry, earth science, engineering, mathematics, physics, psychology, and anthropology-sociology. It should be noted that the academy has no sections of mathematics or psychology.
- b. Our rosters contain approximately 400 names. Even so, there is need for more complete coverage in some subjects in some sections of the state.
- c. We have received 655 requests for visits in 1963-64, from 502 schools, in 85 counties. Last year, we completed 487 visits, in 402 schools of 83 counties.
- d. We know that 424 visits have been completed this year, and there are 58 more which have been definitely scheduled. In addition, 85 more requests have been approved and visitors assigned. On the basis of "shrinkage" experienced in previous years, it seems rather safe to predict that by the end of the present season, we shall have completed more than 520 visits.

3. Grants and finances. Our N.S.F. grant for 1963-64 provides \$26,000, which should see

us through June, although it may be a tight squeeze. Our N.S.F. grant for 1964-65 is \$22,000, which will not be adequate for the year. An additional \$8,000 to \$10,000 will be needed, if we are to take care of the demands which can be expected. We are working on this problem, and are optimistic of the outcome.

W. A. MANUEL, *Director*

REPORT OF THE COMMITTEE ON EDUCATION

On December 12, 1963, a three member delegation (Everett Bush, John Melvin, W. R. Riley) representing the committee met with Dean O. Clark, Director of the Division of Teacher Education and Certification, and with Maxson F. Greene, Supervisor of Certification of the State Department of Education. Our discussions related to possible future modifications in the certification requirements for secondary and elementary school science teachers.

We learned that little could be done presently to implement the recommendations of this committee presented to the Academy at its annual meeting in April, 1963. We were encouraged by Dr. Clark's suggestion that during the coming academic year consideration could probably be given to the recommendations for improvement of the certification requirements of science teachers. He is directing his attention this first year in office to the apparently more pressing problem of temporary certification in all fields.

It is recommended that this committee be continued and that they press vigorously for a hearing with Dean Clark and appropriate persons in the year ahead.

W. R. RILEY, *Chairman*

REPORT OF THE RESOLUTIONS COMMITTEE

Be it resolved that the members of The Ohio Academy of Science express to the administration of Western Reserve University, to the respective Science Departments, and in particular, to Professor James D. Crum, Chairman of the Local Committee on Arrangements, and to the members of his committee, their sincere appreciation of the efforts extended by them in arranging for the excellent facilities and thoughtful hospitality during the 73rd Annual Meeting.

Be it further resolved that special commendation be extended to Professor Charles A. Randall, President of the Ohio Academy of Science, to Professor William G. Gambill, Jr., Secretary, to Professor Richard S. Davidson, Treasurer, and to the Section Vice-Presidents, for their successful guidance of the activities of the Academy during the past year.

Be it further resolved to recognize and commend the special activities of three men directly concerned with a particular activity of the Academy, Mr. John H. Melvin, Executive Secretary, Professor William A. Manuel, Director of the Visiting Scientist Program and Professor G. Gerald Acker, Director of the Junior Academy.

Finally, be it resolved that a sincere thank you be expressed to Western Reserve University for the courteous entertainment of the Council Members and their ladies at the dinner on Thursday, April 23, 1964.

W. E. SINGER, *Chairman*

REPORT OF THE GOVERNMENT ADVISORY COMMITTEE

No meeting of the full committee was held this year. At any time, this committee is ready to act when the alert signal is given by some state officer or by our Academy Executive Secretary.

Actually, many letters and telephone calls were made to each of several members of the Governor's Cabinet in an attempt to enlist the interest and active request for advice from some one state department. Although no specific request materialized, through these letters and calls, and meetings with the Academy Executive Secretary, the present state government is well aware of the existence of the Academy, and there is promise that some sort of working relation may develop soon.

RICHARD P. GOLDTHWAIT, *Chairman*

REPORT OF THE EXECUTIVE SECRETARY

Maximum membership in The Ohio Academy of Science is attained each year on June 30. The following day, all members six months delinquent in dues payment are expunged from the records. (Many of these expungees achieve immediate reinstatement through the proper fiscal procedure.) In 1963, we reached an apparent all-time high in membership with 1966 souls. (For purposes of this report, both institutions and corporations are considered to possess souls. There are, of course, some who would question this.)

The Academy also merited the support of a record number of institutions and corporations in 1963. For this generous support, we salute the following 63 organizations:

American Aggregates Corporation
American Association for the Advancement
of Science
American Optical Company
Antioch College
Armco Steel Corporation
Baldwin-Wallace College
Battelle Memorial Institute
Bowling Green State University
Case Institute of Technology
Central National Bank, Cleveland
Central State College
Champion Spark Plug Company
Citizens Savings & Loan Company
City National Bank & Trust Company,
Columbus
Cleveland Regional Council of Science
Teachers
Columbia Gas System, Inc.
Columbus & Southern Ohio Electric
Company
Columbus Technical Council
Cooper Tire & Rubber Company
Dayton Power & Light Company
Denison University
Ford Motor Company
General Motors Corp., Dayton Division
General Tire & Rubber Company
Goodyear Tire & Rubber Company
C. P. Hall Company
Huntington National Bank, Columbus
Kaiser Jeep Corporation
Kent State University
Chas. F. Kettering Foundation
Marathon Oil Company

Marietta College
Mead Corporation
Miami University
National Cash Register Company
National Science Foundation
North American Aviation, Inc., Columbus
Division
Ohio Bell Telephone Company
Ohio Chamber of Commerce
Ohio Edison Company
Ohio Northern University
Ohio Research and Development
Foundation
Ohio State University
Ohio University
Ohio Wesleyan University
Owens-Illinois Glass Company
Ranco, Inc.
Republic Steel Corporation
The Stolle Corporation
Suburban Motor Freight, Inc.
Union Carbide Corporation
University of Akron
University of Cincinnati
University of Dayton
University of Toledo
U. S. Department of Health, Education, and
Welfare
Warner & Swasey Foundation
Wean Engineering Company, Inc.
Western Electric Company, Inc.
Western Reserve University
Wilmington College
Xavier University
Youngstown Sheet & Tube Co.

Finally, progress toward the achievement of Academy objectives is possible only through the individual effort of the members. For the 1963 progress described on the preceding pages, you also deserve a king-size salute.

JOHN H. MELVIN, *Executive Secretary*

REPORT OF THE NECROLOGY COMMITTEE

Herewith follows a list of the members of The Ohio Academy of Science whose deaths have occurred during the period April 1963 to April 1964.

Dr. Wallace H. Deeble, 58, of Tarentum, Pennsylvania, died July 16, 1963 in the Allegheny Valley Hospital. Dr. Deeble was born in Ringtown, Pennsylvania, on September 18, 1904. In 1923 he received a diploma in education and mathematics from Pennsylvania State Teachers College at Kutztown. He then taught in the grade schools in Union Township and Port Carbon, Pennsylvania, for several years. In 1929 he received his BA degree in education and modern languages from Muhlenberg College at Allentown, and in 1933 his master of education degree in education administration from Rutgers University. Between 1929 and 1947 he was a teacher of high school mathematics at Roselle, New Jersey. In World War II, from 1942 to 1946, he served in the Army Air Corps as an enlisted man and attained the rank of first lieutenant as a supervisor of ground school training. He returned to school in 1947 at The Ohio State University receiving a master of science degree in chemistry in 1952 and a Ph.D. degree in chemistry in 1957. From 1957 until his death, he was employed as an analytical chemist at PPG's Glass Research Center in Harmar Township. His specialty was in infrared absorption spectroscopy. Dr. Deeble was a member of the American Chemical Society, the Spectroscopy Society of Pittsburgh and The First Community Church of Columbus, Ohio. He is survived by one brother, Dr. George F. Deeble, of Dayton, Ohio.

Dr. Frank O. Hazard, 57, of Wilmington, Ohio, died on June 15, 1963 at the Mayo Clinic in Rochester, Minnesota. Dr. Hazard joined the Academy in 1926 and was elected a fellow in 1941. He belonged to Section A, Zoology and was active in the Visiting Scientists program. A 1927 graduate of Wilmington, Dr. Hazard began teaching biology at Wilmington the following year. He became chairman of the department in 1937. He also served his alma mater as dean

of personnel and assistant to the president under Dr. Watson. He had taught at Whittier College during the summers of 1936 and 1938. A native of Wilmington, he graduated from the local high school in 1923. After earning his bachelor's degree at Wilmington, he received his master's (1928) and Ph.D. (1937) degrees from The Ohio State University.

His studies on the effects of insecticides have attracted international interest to an insecticide testing laboratory which he maintained in Wilmington. In 1958 Wilmington College awarded him an honorary doctor of science degree and last spring the Gamma Phi Gamma fraternity, of which he was a member as a student, presented him with a citation. Dr. Hazard was also president of the Clinton Construction Co. in Wilmington and a director of the Home Federal Savings and Loan Association of Cincinnati. His survivors include his wife, Barbara Brandon Hazard, two daughters, Rebecca Hazard Helton, and Susan Hazard of Wilmington.

Dr. James Lee Mortenson, Professor of Agronomy, The Ohio State University, was born September 23, 1924, in Benson, Arizona. He died May 19, 1963, of injuries resulting from an automobile accident the previous day. At the time of his death he was directing an extensive research program in soil science involving the identification of components of soil organic matter and their physical and chemical characteristics, a study of factors that influenced the decomposition of organic compounds incorporated into the soil, and the measurement of radioactive isotopes in soil and plant samples.

Dr. Mortenson graduated from the high school in Thatcher, Arizona, in 1942. Later that year, he enlisted in the U. S. Air Force and served as a bombardier instructor until his release in 1945. He attended Gila Junior College, Montana State College, and Brigham Young University, where he completed his B. S. degree in 1951. He did his graduate work at The Ohio State University and received his Doctor of Philosophy degree in 1955. At that time, he was appointed Assistant Professor and became Professor in 1962.

He was a member of the following professional and honorary societies: American Society of Agronomy, Soil Science Society of America, International Society of Soil Science, American Chemical Society, American Association for the Advancement of Science, Geochemical Society, Sigma Xi, Phi Kappa Phi, Phi Lambda Upsilon, Gamma Sigma Delta and was numbered among those listed in Who's Who in Radiology.

Dr. Mortenson was an energetic, enthusiastic, and meticulous worker. He had contributed over forty articles in soil science. He wrote articles for the farm magazines as well as for the professional journals. He was well informed on instruments and techniques used in chemical and radiation analyses. He used many of these instruments and techniques to increase man's knowledge about the composition of soil organic matter, the transformation of organic compounds in the soil, and the movement of radioactive constituents from fallout into the food chain. He was a consulting editor for Soil Science and an associate editor of *Soil Science Society of America Proceedings*.

Dr. Mortenson joined this academy in 1962 as a member of Section G, Chemistry.

Professor Perry R. Longaker, M. D. 56, of 20 Sherwood Court, Tiffin, was stricken by a coronary heart attack in his office in the Heidelberg College Science Hall, May 28, 1963.

Dr. Longaker joined the academy in 1961 in Section D, Medical Sciences. A native of Three Rivers, Michigan, Dr. Longaker was born September 11, 1906 to the Rev. George and Martha Marie Longaker. He married Ruth Syler in Canton on June 23, 1932, and she survives, as do also two sons and a daughter, Perry R., Jr., Acton, Mass.; Mrs. Darrell Brand, Cleveland; and Christopher Jay, now a student at Heidelberg, two brothers, the Rev. Robert, Cranford, N. J., Dr. Paul, Youngstown, a sister, Mrs. Bernard Suttman, Miamisburg; and two grandchildren.

Dr. Longaker was graduated by Heidelberg College in 1927 and received his doctor of medicine degree from Johns Hopkins University in 1931. He then interned in Miami Valley Hospital in Dayton where he was associated for three years with Dr. Elmer Arn in the Dayton Clinic. He came to Heidelberg in 1960. At Heidelberg he was an associate professor in the department of biology.

Dr. Longaker was a member of Trinity United Church of Christ in Tiffin and a former member of United Congregational Christian church in Conneaut. He was also a fellow of the American College of Surgeons.

Dr. Samuel Martin Mayfield, Professor Emeritus of Geology at Bowling Green State University, died on August 11, 1963, of a heart attack. He was 75 years old.

Dr. Mayfield joined the Academy in 1938, was elected a Fellow in 1954, and was active in the Visiting Scientists Program since its beginning in 1960-61. He belonged to Section C, Geology.

Dr. Mayfield held B. S. and B. A. degrees from Berea College, Berea, Kentucky, where he taught geology from 1922 to 1932. During this period he also served during the summers as assistant to the state geologist of Kentucky. After his service at Berea, he received the Ph.D. from the University of Chicago. He then taught at Intermountain Union College in Helena, Montana, and at Linfield College in McMinnville, Oregon, before joining the staff at Bowling Green State University in 1936. He became Professor of Geology and was chairman of the Department of Geology for many years. He retired in 1958.

Edwin W. King, 60, of 109 Landers Avenue, Columbus, coordinator of atomic energy for the State of Ohio with offices at 155 North High Street died November 10, 1963, in Mercy Hospital, where he recently underwent surgery.

He formerly was with the Division of Safety and Hygiene. He was a member of Mt. Gilead Lodge of Masons, Scottish Rite and Shrine and the Tri-Village Shrine Breakfast Club.

Mr. King joined the Academy as a member of Section E, Physics and Astronomy, in August of 1963. His wife, Dorothy, survives.

Arthur S. Kiefer, 74, Columbus naturalist and a teacher for many years, and a one-time Ohio State University football star, died November 11, 1963, at his home.

Mr. Kiefer was associated with North High School for 42 years, retiring two years ago as head of the school's science department.

A graduate of The Ohio State University, receiving his B. A. in horticulture in 1915 and his M. A. in education in 1932, Mr. Kiefer was a member of OSU's football squads in 1912, 1913 and 1914. He was Ohio State's first winner of the Western Conference medal for athletics and scholarship. He also played football for the Cleveland Naval Team in 1918. Prior to teaching at North, he taught at Maryville College, Maryville, Tennessee, Pennsylvania State and, for a short time, at OSU. He had been a coach at the Maryville college. For 11 summers, he served as head of the nature department of Camp Kawanhee, Weld, Maine. He was a member of North Broadway Methodist Church and the American Chemistry Society.

Surviving are his wife, Josephine; daughter, Mrs. Harry L. Edwards, Racine, Wisconsin, a sister, Mrs. Walter E. Watson, Cincinnati, and two grandchildren. Mr. Kiefer joined Section G, Chemistry, in 1948 and was elected a Fellow in 1950. He participated in the Visiting Scientists Program from its beginning in 1960-61 through 1962-63.

Dr. Clair L. Worley died on June 18, 1963, at North Jackson, Ohio. Dr. Worley, head of the biology department of Youngstown University, came to the University in September of 1945. Before coming to Youngstown, Dr. Worley was associated with subdivisions of Wyeth, Inc., Chagrin Falls, as a research microbiologist in the field of antibiotics.

For several summers Dr. Worley was a plant explorer in the Pacific Northwest for the U. S. Department of Agriculture, and from 1939 to 1942 was a member of the graduate and research faculties of the University of Georgia, Athens, Georgia. During the following year he was assistant division manager of the Societe Haitiano-Americaine de Developpement l'Agricole, Bayeaux, Haiti. Dr. Worley is a graduate of Hiram College where he received the bachelor of arts degree in 1934. His graduate study was at the University of Idaho where he was granted the master of science degree in 1936, and in 1940 he received the doctor of philosophy degree from the University of Wisconsin. The author of many scientific articles which have been published in professional journals, he has written a college text book and a laboratory guide "Basic Principles of General Biology" published by William C. Brown Co., Dubuque, Iowa.

Dr. Worley was born in Warren and attended Chalker High School at Southington, Ohio. He is a member of Sigma Xi Fraternity (Idaho Chapter), American Society of Plant Physiologists, Botanical Society of America, American Association for the Advancement of Science, Tennessee Academy of Science, and Southern Biologists.

Dr. Worley was director of the first In-Service Institute at Youngstown University, sponsored by the National Science Foundation. He joined the Academy in 1947 and was a member of Section B, Plant Sciences and was elected a Fellow in 1950.

Jacob Ralph Shank died of coronary thrombosis at Columbus, Ohio, on the 20th of April, 1963, aged 75 years and 10 months.

Mr. Shank became a member of Section C, Geology, in 1947, and was elected a fellow in 1955. He was a native of Pennsylvania, a Penn State graduate in civil engineering class of 1910, recipient of the professional degree of Civil Engineer in 1935.

Mr. Shank's professional specialty was structural engineering. He had industrial and consulting practice in this field throughout his entire professional career. In 1917 he became instructor in the Department of Civil Engineering at The Ohio State University, assistant professor in 1918, a full professor in 1923, emeritus professor in 1958. From 1936 to 1955 he was also assistant director of The Ohio State University Engineering Experiment Station. He was executive secretary of the Ohio State Board of Building Standard 1957-1959. He did much research on structural problems, particularly on the plastic flow of concrete, and published many professional papers. He was a member of the American Society of Civil Engineers and of a number of other professional, scientific, and academic organizations.

Professor Shank's hobby was the study of history, and his conversation was full of allusions to the similarity of problems and conditions today to those of various times in the past. He sometimes referred to the fact that he had written nothing on historical subjects, and added "when I go, all this will go with me." Much of it remains, however, in the memories of his friends.

His widow, two sons, and one daughter survive.

M'Della Moon, 73, Emeritus Professor Biology, died on the evening of September 16, in the Lima Memorial Hospital. Miss Moon received her A.B. from Miami University and her M.A. from The Ohio State University. She was a member of the Bluffton College faculty from 1921 until her retirement in 1961. Since that time she taught one class until final complete retirement at the end of the 1962-63 school year.

During the forty years of her tenure she was a member of important committees, such as the Curriculum and the Administration Committees. As a dormitory head resident she was a

counselor of both men and women students. Even up to the last minutes of her life she was of a jovial disposition, facing her last illness with faith and courage. She invariably spread good will rather than gloom.

"Miss Moon's influence was not restricted to the campus, nor even to the community. She was well known throughout the state, especially among those who were interested in conservation of natural resources. She was highly regarded as a scientist and as a friend."

Miss Moon joined the Academy in 1924 and was elected a Fellow in 1940. She belonged to Section B, Plant Sciences.

Dr. Frank Princi, 52, associate director of the Kettering Laboratory at the University of Cincinnati, died in Cairo, Egypt, September 18, 1963.

Dr. Princi had been traveling in Egypt with his wife as medical consultant for the Ethyl Corp. He was scheduled to attend the International Congress of Occupational Health in Madrid.

Dr. Princi had been on the University of Cincinnati staff since 1950 when he was appointed Associate Professor of industrial medicine. He was also assistant director of the Institute of Industrial Health of the Graduate School. Dr. Princi lived at 6477 Honeysuckle Drive, Mt. Washington, with his wife, Eva, and their two sons, Paul Robert 16, and James Douglas, 11.

A native of Boston, he graduated from the University of Colorado where he received his B.S. and M.D. degrees. During World War II he served as a surgeon with the Fourth Division. He was awarded the Bronze Star with Oak Leaf Clusters.

After the war he returned to the University of Colorado where he taught for three years. He had been a consultant to the surgeon general of the U. S. National Institute of Health and consultant to the Los Alamos Medical Center.

He was also President of the Greater Cincinnati Heart Association.

Homer C. Sampson, Professor Emeritus of Botany, died July 2, 1963. He was born in Wheeler, Illinois, on January 21, 1885. He received the B.S. degree from the University of Chicago in 1914, and the Ph.D. degree from the same institution in 1917. His entire professional career was devoted to the service of The Ohio State University. He first came to this university as an instructor in 1917, was promoted to assistant professor in 1919, and to professor in 1922. He retired with the rank of professor emeritus in 1955.

Dr. Sampson was a man of broad interests in the general field of botanical science. He was an original thinker in both the educational and scientific aspects of his discipline and a firm protagonist of the points of view which he adopted. Although his contributions to science were not negligible, especially at the theoretical level, he was even more of an educator than a scientist. He was a dedicated and effective classroom teacher and sparked the spirit of inquiry in the minds of many students. For most of his career at The Ohio State University he was in charge of the general botany courses which under his direction and inspiration became models for similar courses in other universities. His contributions to educational theory and practice have had a wide influence on the teaching of botany but also of other sciences in both this and other universities.

Dr. Sampson was the author or co-author of several books and also of a number of Journal articles, especially in the fields of plant ecology, plant physiology, and botanical education. Forest ecology was one of his research interests and for many years he served as a collaborator for the Central States Forest Experiment Station.

Dr. Alfred James Wright, Linworth, Ohio, died Tuesday, January 14, 1964.

Professor Wright was born in Middleton, Ohio, May 10, 1897. He received the A.B. degree from the University of Michigan in 1922, the A.M. degree from the University of Pennsylvania in 1925, and the Ph.D. degree from the University of Michigan in 1934. He was an instructor in George School in eastern Pennsylvania, 1922-1925, and an instructor at the University of Pennsylvania, 1925-1928. He came to The Ohio State University as an instructor in 1928 and attained the rank of professor in 1948. He also taught as a visiting professor at Miami University in the summers of 1941, 1942, and 1943, and at the University of Nebraska in 1950.

He was a veteran of World War I, he was a member of the American Legion, and the Association of American Geographers.

He was the author of an "Economic Geography of Ohio" and various papers in geographic journals.

Surviving are his wife, Helen B., sons, Dr. Thomas E., San Francisco, and William B., three grandchildren, and a brother, Ralph E. of Philadelphia.

Dr. William Clifford Morse was a member of Section C, Geology, since 1920 even though he spent the last half-century of his career far beyond the borders of the Buckeye State.

Born on a farm near Starr in Hocking County, Ohio, on October 28, 1874, Dr. Morse attended the public schools of his neighborhood, received the A.B. degree from The Ohio State University in 1906, the A.M. degree in 1908, and in 1927, the Ph.D. from Massachusetts Institute of Technology.

Starting his long teaching career as a Fellow and Assistant in the Department of Geology at Ohio State (1906-1908), he was successively Instructor at Ohio State (1908-1913), Instructor at Washington University (1914-1916), and Assistant Professor (1916-1918). From 1918 to 1926, he served as Chairman of the Department of Geology of Mississippi Agricultural and Mechanical College (now Mississippi State University).

During the 1926-1927 session, Dr. Morse was in residence at Massachusetts Institute of Technology, where he received the Ph.D. in 1927. In 1930-1931, he was visiting professor at the University of North Carolina. In 1934, he was appointed Director of the Mississippi State Geological Survey and Chairman of the Department of Geology of the University of Mississippi at Oxford, Mississippi. He held the position of Director of the Survey and State Geologist until his retirement June 30, 1958. During the summer of 1937, he was Honorary Fellow at Ohio State.

Dr. Morse's record of field work is impressive. He was assistant geologist for the geological surveys of Ohio and Kentucky and for The Ohio Academy of Science during the summers 1907 through 1910, and geologist for the State Highway Department of Ohio, 1912-1913. He was engaged in oil and gas exploration for the Illinois Geological Survey through the second half of 1914 and the summer of 1915; he made a survey of oil structures in Kansas, Illinois, and Missouri during the summers of 1916 and 1917 and was consulting geologist for several oil companies in Ohio, Illinois, Missouri, Oklahoma, Texas, Louisiana, and Mississippi from 1914 to 1934. The summers of 1919-1921 were devoted to work for the Kentucky and Mississippi geological surveys, and in 1926, he completed his field study of the Paleozoic rocks of Mississippi for the Mississippi Geological Survey, a study which served as the subject of his doctor's dissertation.

His major professional contributions were to the geology of his adopted state and most of his 47 publications were on some phase of the mineral resources or geology of Mississippi.

Dr. Morse prized association with other scientists. He was a Fellow of Sigma Xi, of The Ohio Academy of Science, the American Association for the Advancement of Science, and of the Geological Society of America; member of the Paleontological Society, the American Association of Petroleum Geologists, the American Association of State Geologists, the Mississippi Geological Society, and the Mississippi Academy of Science.

In 1896, Dr. Morse married Miss Martha Rarick. They had one son, Paul Franklin Morse, who became known in Geology before his death in 1929. Some years later, Mrs. Morse died and in 1951, Dr. Morse married Miss Dorothea Bignell, who survives him.

On March 2, 1962, this friendly, talented, productive geologist and teacher died in his eighty-eighth year.

Dr. James W. Gebhart died in Cleveland, Ohio, in June 1963 of coronary thrombosis. He was just returning from two years of service in science education in Pakistan.

James Warren Gebhart received his secondary education in the high schools of Germantown and Miamisburg, Ohio. He did his undergraduate college work at Heidelberg University (now Heidelberg College) at Tiffin, Ohio, from which he graduated in 1924, with a major in chemistry. He was principal and teacher of science in the high schools at Waterville and Germantown, Ohio, for two years each. In 1929, after a year in industrial work, he returned to teaching in the Euclid, Ohio, High School, where he remained except for two brief intervals; eventually he became head of the science department. He served one year as Fish Management Agent for the state of Ohio and one year as educational assistant in conservation education in the state of Maryland. In 1955 he resigned his position at Euclid to join the staff of Montana State University.

During these years of teaching and other activities, he continued his formal education by taking graduate work in biology. He studied at the University of Toledo, the University of Wisconsin, Western Reserve University, and The Ohio State University. He was a student at the Ohio Conservation Laboratory in 1948. He received the Master of Science degree with a major in zoology from The Ohio State University in 1936 and the Ph.D. degree in science education from the same institution in 1960.

His activities in conservation and conservation education have extended over many years and have been so numerous that only a few of them can be mentioned here. In 1938-39, when he was Fish Management Agent for the Ohio Division of Conservation and Natural Resources, he served as co-director of the first National Wildlife Week for Ohio; the following year he was director. He was a charter member of the Cuyahoga Conservation Council, and organized the Shore Conservation Club in that county. From 1941 to 1952, except for the year when he was working in Maryland, he was trailside naturalist for the Cleveland Museum of Natural History. He was a director of the Cuyahoga Conservation Council and of the Cleveland Bird Club. He worked with two Cleveland schools carrying out a 300-mile conservation trip for ninety high-school boys. He organized and directed two weekend conservation workshops for teachers in schools on the east side of Cleveland. Under his direction, students from East High School helped the Cleveland Audubon Society plant 7,000 trees, and the Holden Arboretum plant 4,000.

One of the most distinctive things he did while teaching at Euclid was to develop an outdoor laboratory for the use of that school. This was one of the earliest such laboratories developed in Ohio and probably one of the first in the nation.

From 1952-55 he was director of the Conservation Education Workshop conducted in the summer by Montana State University. Since joining the faculty of that University as a full-time member in 1955, he has continued his activities in the conservation-education field. He has served as director of conservation week for the state of Montana and as director of the Montana Conservation Council. In 1960 he helped organize and direct a one-week conservation workshop for the Federated Women's Club of the Pacific Northwest.

ROBERT M. GIESY, *Chairman*

OTTO EMERY JENNINGS
(1878-1964)

ADOLPH E. WALLER

Professor Emeritus, Botany and Plant Pathology, The Ohio State University

Otto E. Jennings was born near Olean in Huron County, Ohio, in 1878. He graduated from High School and taught in one room country schools for three years before he entered The Ohio State University at the age of twenty-one years. For his services as a teacher in the country schools, he was paid eighteen dollars and fifty cents a month. If he added janitor service to his teaching, he was given two dollars more per month.

Such Spartan and dutiful devotion sounds like a New England background. Dr. Jennings' forebears were from a pre-Revolutionary New England family who had migrated to the Connecticut Western Reserve. They had settled on a small holding in Huron County and Otto's boyhood was spent on a farm. There was plenty of hand labor with little labor-saving machinery before he entered the University in 1899. He planned in Columbus to earn as he studied. His first job was as a delivery man in the Dairy Department of the University.

In a short time he was placed in charge of feeding the dairy herd. Here his problem was to balance costs and calories against the standards of nutrition. His reputation grew and he presently came into contact with Professor William A. Kellerman, the head of the relatively newly established Department of Botany. Botany had been taught previously, but in the same division as Forestry and Horticulture. With the coming of Dr. William Kellerman, a separate department was established for Botany and Otto Jennings soon became a student in it and was placed in charge of the greenhouse.

Dr. Kellerman must have been pleased with the modest frugal ways and the unbounded energy of Otto Jennings. Dr. Kellerman was imbued with something of the same spirit. Otto was soon made an assistant in the Department of Botany. A number of well-preserved plant specimens from Northern Ohio were added to the collection in the Herbarium, some of which are still to be found, initialed O.E.J.

The first paper published by Dr. Jennings was presented in 1901. Officially this appears in Volume 16 of the *Journal of the Columbus Horticultural Society*. The title of the paper is "Notes on Abutilons". The subject is of interest both horticulturally and botanically.

Under Dr. Kellerman the several faceted interests of the Botany Department began to expand. The Lake Laboratory at Cedar Point was a joint venture of the Botany and the Zoology Departments. The *Ohio Naturalist* became the official organ of publication for the Biology Club whose membership sprang from faculty and students in all the branches of the biological sciences. Volume one of the *Ohio Naturalist* appeared in 1900 and Jennings became a steady contributor, publishing independently as well as with Dr. Kellerman and Professor J. N. Schaffner. With Kellerman's help he brought out a list of the plants found at Cedar Point. Between 1902 and 1913 Dr. Jennings appears as author or co-author with Kellerman and Schaffner of 17 papers that were published in the *Ohio Naturalist*. At the same time Dr. Kellerman was editing the *Mycological Bulletin*. Jennings published there, too, and in "*Torreya*", the journal of the Torrey Botanical Club.

It is interesting to see how Dr. Jennings' views expanded and altered under the stimulus of the enthusiasm of the botanical group. His first Cedar Point paper, referred to above, was a list of the plants growing there. In 1908 he published a most commendable work with a strong dynamic viewpoint entitled "An ecological classification of the vegetation of Cedar Point." This is a classic in the early years of the *Ohio Naturalist*.

A friendship that must have begun at this time, since both were enthusiastic young botanists with a wide range of interests, developed between Otto Jennings and Robert F. Griggs. Griggs' background also was Connecticut. His father was the engineer for whom the first of the Scioto dams was named. This dam is the oldest of the dams insuring Columbus its supply of water. Griggs published a small monograph on the Ohio Willows in 1903 in the *Ohio Naturalist* while Jennings published on some of the conditions of the Ohio Climate—particularly as related to plant life. After Dr. Griggs retired in 1947 from George Washington University, he went to the University of Pittsburgh as Professor of Biology in charge of field biology. This invitation came from Dr. Jennings, who had long been Chairman of the work in the University of Pittsburgh and also Director at the time of the Carnegie Museum.

Another link in Dr. Jennings' career came from two personalities for whom Columbus was home. Both had lived there before Ohio State was established, but they were so famous that all students in the Botany Department must have heard of them and Jennings' later life carries the sparks of that inspiration. One was Leo Lesquereux, the Swiss-American, known as the father of Paleobotany in North America because of his wonderful studies in fossil botany. Lesquereux is famous for his work on the coals of Pennsylvania as well as materials from Dakota, Kansas and the Rockies. He came to Columbus at the suggestion of Asa Gray, who knew that his young correspondent, William S. Sullivant, needed help in the preparation and study of an ambitious collection of mosses he was assembling. Sullivant employed Lesquereux for a number of years. After some of Sullivant's moss studies earned for Sullivant the designation of "Father of North American Bryology," Lesquereux continued to make Columbus his residence. When in the summer of 1899 the A.A.A.S. meeting was held in Columbus, Dr. Edward Orton, Sr.,

presided. He said that the two botanists, Sullivant and Lesquereux, put the city on the map for all scientists. Both Griggs and Jennings must have heard of these two men.

It is therefore interesting to note that Jennings' first course was offered in 1911 as Instructor of Paleobotany at the University of Pittsburgh. What a joy to Jennings this appointment must have been. Carrying Lesquereux's work into Pennsylvania!

In 1913 Dr. Jennings published his "Manual of the Mosses of Western Pennsylvania." Later this work was revised and expanded. The later edition was published by the Notre Dame University Press. Dr. Jennings was also, for a quarter century, the editor of "The Bryologist," the Sullivant Moss Society official publication. This editorship brought worldwide correspondence and friendships to Dr. Jennings.

A long and honorable position in the field of education followed the Instructorship in Paleobotany. In 1914 Dr. Jennings became Professor and Head of the University of Pittsburgh's Department of Botany. In 1935 he became Head of the Department of Biology. He was appointed Acting Director of the Carnegie Museum in 1945 and Director in 1946, when he retired as Head of the Biology Department of the University, but retained his Professorship.

His travels included studies in Cuba and the Isle of Pines in 1910. This was followed by work in Northwestern Ontario. In 1915 he was in the State of Washington. He published on the Oligocene Flora of Montana for the School of Mines of Missoula, Montana.

His crowning work, however, is a matter of beauty as well as of science. It bears the imprint of 1953 from the University of Pittsburgh Press. It is a two-volume folio work, "The Wild Flowers of Pennsylvania and the Upper Ohio Valley." It contains detailed studies of approximately 2500 species.

As this work was taking shape over the years, it must have drawn the attention of Dr. Audrey Avinoff, the Director of the Carnegie Museum. He had served as Director from 1926 to 1945 when Dr. Jennings took over the Directorship. As Curator Emeritus, Dr. Avinoff volunteered to produce the illustrations. Dr. Avinoff's background is much more spectacular than Dr. Jennings. The collaboration of these two Emeriti is one of the most notable events in American biology.

Dr. Avinoff has been described as a painter, writer, zoologist, entomologist, musician, lawyer, bibliophile. He spoke four languages. He could read ten. He was born a Russian aristocrat in 1884. His birthplace was Tulchin, Southern Russia. His father was General Nicholas Avinoff. In Alaska, Cape Avinoff honors his grandfather, Admiral Alexander Avinoff. As an ensign, Admiral Avinoff had been on board Nelson's flagship during the battle of Trafalgar.

Dr. Avinoff's coming to America occurred during the first phase of World War I when he was a representative of the Zimsky Union, an old Russian organization that was similar to the American Red Cross. He was in the United States to buy supplies in 1915. When the 1917 Communist coup d'etat buried the Czarist government, he returned briefly to Russia but was able to come with his family to the United States and to become a United States citizen in 1928. He temporarily became a portrait painter in New York City.

Dr. Avinoff's training and talents had admitted him to the Moscow Society of Artists while he was still a Russian student. His father had taken him to Central Asia while stationed in the Mountains in Tien-Shan in Central Asia. Here it was that Dr. Avinoff began collecting butterflies and accumulated one of the world's most notable entomological collections. At the age of 18 he also began the study of law in Moscow University. So Moscow had in one person around 1902 a young man distinguished in entomology, in the group of artists, and a student of law. It was the entomological collection that caused Dr. Douglas Stewart of the Carnegie Museum to invite the portrait painter to Pittsburgh. On the death of Dr. Stewart in 1926, Dr. Avinoff became Director.

To return now to Dr. Jennings. The careful work on the native plants of the Ohio Valley, which had been the life work of Dr. Jennings, needed an illustrator. When Dr. Avinoff volunteered to paint and Dr. Jennings accepted the opportunity to have his work illustrated, the result was the most beautiful work on wild flowers that has been produced in the United States. The funds for these books were generously provided by C. F. Lewis of the Buhl Foundation from a joint grant from the University of Pittsburgh and the Carnegie Museum. This is a fitting and beautiful tribute to the talents of two of Carnegie Museum's Directors.

Dr. Otto Emery Jennings, 1878-1964. May his loyalty to scholarly tradition inspire today's young men to great future goals. Many honors come to such a man. He was a Fellow of the American Association for the Advancement of Science and was one of the oldest members in point of years of The Ohio Academy of Science. He had joined it within a few years of its foundation. He also held membership in a score of other organizations. He was the first President of the Pennsylvania Academy of Science, President of the Botanical Society of Western Pennsylvania and of the Academy of Science and Art of Pittsburgh. Several honorary societies also claimed him; Sigma Xi for general science, Phi Sigma for biology and Alpha Zeta for agriculture. He was a member of the Advisory Board of the Federal Northeastern Forest Experiment Station. He had been granted two honorary degrees. He had been married in 1906 to Miss Grace Emma Kinzer, then an assistant in Botany at the Carnegie Museum. He collected more than 70,000 plant specimens for the Museum. It was therefore in the light of all this complicated scientific detail that his colleague and friend, Dr. Audrey Avinoff, prepared the two hundred-plus water color plates that illustrate and enhance to noble proportions the "Wildflowers of Western Pennsylvania and the Upper Ohio Valley."